

What is claimed is:

1        1. A peptide less than 19 amino acids in length,  
2    wherein the peptide comprises the amino sequence Leu Met Gly  
3    Thr Leu Gly Ile Val Cys Pro Ile Cys (SEQ ID NO:16).

1        2. The peptide of claim 1, wherein the peptide's  
2    amino acid sequence comprises Leu Leu Met Gly Thr Leu Gly  
3    Ile Val Cys Pro Ile Cys (SEQ ID NO:3).

1        3. The peptide of claim 1, wherein the peptide's  
2    sequence comprises Xaa Leu Met Gly Thr Leu Gly Ile Val Cys  
3    Pro Ile Cys, Xaa being Met, Ala, Ser, Arg, Lys, Gly, Gln,  
4    Asp, or Glu (SEQ ID NO:19).

1        4. The peptide of claim 3, wherein Xaa is Ala or  
2    Met.

1        5. The peptide of claim 1, wherein the peptide's  
2    sequence comprises Leu Leu Met Gly Thr Leu Gly Ile Val Cys  
3    Pro Ile Cys Ser Gln Lys (SEQ ID NO:25).

1        6. A peptide less than 19 amino acids in length,  
2    wherein the peptide comprises the amino acid sequence Gly  
3    Thr Leu Gly Ile Val Cys Pro Ile (SEQ ID NO:21).

1        7. The peptide of claim 6, wherein the peptide's  
2    sequence comprises Xaa Gly Thr Leu Gly Ile Val Cys Pro Ile  
3    Cys, Xaa being Met, Ala, Ser, Arg, Lys, Gly, Gln, Asp, or  
4    Glu (SEQ ID NO:25).

1               8. The peptide of claim 6, wherein the peptide's  
2 sequence comprises Met Gly Ile Val Cys Pro Ile Cys (SEQ ID  
3 NO:26).

1               9. The peptide of claim 7, wherein the peptide's  
2 sequence consists of Xaa Gly Thr Leu Gly Ile Val Cys Pro Ile  
3 Cys, Xaa being Met, Ala, Ser, Arg, Lys, Gly, Gln, Asp, or  
4 Glu.

1               10. The peptide of claim 8, wherein the peptide's  
2 sequence consists of Met Gly Thr Leu Gly Ile Val Cys Pro Ile  
3 Cys Ser Gln Lys (SEQ ID NO: 26).

1               11. A peptide consisting of the amino acid sequence  
2 Thr Leu Gly Ile Val Cys Pro Ile (SEQ ID NO:20).

1               12. A polypeptide comprising a first peptide and a  
2 second peptide linked by a peptide bond, the first peptide  
3 being a peptide which controls intracellular trafficking of  
4 a peptide to which it is attached, and the second peptide  
5 consisting of a sequence 12-18 amino acids in length  
6 comprising the sequence Leu Met Gly Thr Leu Gly Ile Val Cys  
7 Pro Ile Cys (SEQ ID NO:16).

1               13. The polypeptide of claim 12, wherein the  
2 sequence of the first peptide comprises the amino acid  
3 sequence Met Ala Ile Ser Gly Val Pro Val Leu Gly Phe Phe Ile  
4 Ile Ala Val Leu Met Ser Ala Gln Glu Ser Trp Ala (SEQ ID  
5 NO:18).

1               14. The polypeptide of claim 12, wherein the amino  
2 acid sequence of the second peptide is Xaa Leu Met Gly Thr

3 Leu Gly Ile Val Cys Pro Ile Cys, Xaa being Met, Leu, Ala,  
4 Ser, Arg, Lys, Gly, Gln, Asp, or Glu (SEQ ID NO:19).

1 15. The polypeptide of claim 12, wherein the amino  
2 acid sequence of the second polypeptide is Ala Leu Met Gly  
3 Thr Leu Gly Ile Val Cys Pro Ile Cys (SEQ ID NO:4).

1 16. The polypeptide of claim 13, wherein the amino  
2 acid sequence of the second peptide is Xaa Leu Met Gly Thr  
3 Leu Gly Ile Val Cys Pro Ile Cys, Xaa being Met, Leu, Ala,  
4 Ser, Arg, Lys, Gly, Gln, Asp, or Glu (SEQ ID NO:19).

1 17. The polypeptide of claim 13, wherein the amino  
2 acid sequence of the second peptide is Ala Leu Met Gly Thr  
3 Leu Gly Ile Val Cys Pro Ile Cys (SEQ ID NO:4).

1 18. A polypeptide comprising a first peptide and a  
2 second peptide linked by a peptide bond, the first peptide  
3 being a peptide which controls intracellular trafficking of  
4 a peptide to which it is attached, and the second peptide  
5 consisting of a sequence 8-18 amino acids in length  
6 comprising the sequence Thr Leu Gly Ile Val Cys Pro Ile (SEQ  
7 ID NO:20).

1 19. A therapeutic composition comprising  
2 (a) the peptide of claim 1, and  
3 (b) a pharmaceutically acceptable carrier.

1 20. A therapeutic composition comprising  
2 (a) the peptide of claim 6, and  
3 (b) a pharmaceutically acceptable carrier.

1           21. A microparticle comprising a polymeric matrix  
2 and the peptide of claim 1.

1           22. A microparticle comprising a polymeric matrix  
2 and the peptide of claim 6.

1           23. A microparticle comprising a polymeric matrix  
2 and the polypeptide of claim 1.

1           24. A microparticle comprising a polymeric matrix  
2 and the polypeptide of claim 18.

1           25. A liposome or immune-stimulating complex  
2 (ISCOM) containing the peptide of claim 1.

1           26. A liposome or immune-stimulating complex  
2 (ISCOM) containing the peptide of claim 6.

1           27. A method of eliciting an MHC class I-mediated  
2 immune response in a mammal, which method comprises  
3 administering a purified preparation of the peptide of claim  
4 1 to a mammal.

1           28. A method of eliciting an MHC class I-mediated  
2 immune response in a mammal, which method comprises  
3 administering a purified preparation of the peptide of claim  
4 6 to a mammal.

1           29. A method of eliciting an MHC class I-mediated  
2 immune response in a mammal, which method comprises  
3 administering the microparticle of claim 21 to a mammal.

1           30. The method of claim 29, wherein the polymeric  
2 matrix of said microparticle consists essentially of a  
3 copolymer of poly-lactic-co-glycolic acid (PLGA).

1           31. A method of eliciting an MHC class I-mediated  
2 immune response in a mammal, which method comprises  
3 administering the microparticle of claim 22 to a mammal.

1           32. The method of claim 31, wherein the polymeric  
2 matrix of said microparticle consists essentially of a  
3 copolymer of poly-lactic-co-glycolic acid (PLGA).

1           33. A nucleic acid comprising a coding sequence  
2 coding for expression of the peptide of claim 1.

1           34. A nucleic acid comprising a coding sequence  
2 coding for expression of the peptide of claim 6.

1           35. A nucleic acid comprising a coding sequence  
2 coding for expression of the polypeptide of claim 12.

1           36. A nucleic acid comprising a coding sequence  
2 coding for expression of the polypeptide of claim 18.

1           37. A plasmid comprising a coding sequence coding  
2 for expression of the polypeptide of claim 12.

1           38. A microparticle comprising a polymeric matrix  
2 and the plasmid of claim 37.

1           39. The microparticle of claim 38, wherein the  
2 polymeric matrix of the microparticle consists essentially  
3 of a copolymer of PLGA.

1           40. The microparticle of claim 38, wherein the  
2       microparticle has a diameter of 0.02 to 20 microns.

1           41. The microparticle of claim 38, wherein the  
2       microparticle has a diameter of less than about 11 microns.

1           42. A cell comprising the plasmid of claim 37.

1           43. The cell of claim 42, wherein the cell is a  
2       mammalian B cell or APC.

1           44. A method of making a polypeptide, which method  
2       comprises maintaining the cell of claim 42 under conditions  
3       permitting expression of said polypeptide.

1           45. A plasmid comprising a coding sequence coding  
2       for expression of the polypeptide of claim 18.

1           46. A microparticle comprising a polymeric matrix  
2       and the plasmid of claim 45.

1           47. The microparticle of claim 46, wherein the  
2       polymeric matrix of said microparticle consists essentially  
3       of a copolymer of PLGA.

1           48. The microparticle of claim 46, wherein the  
2       microparticle has a diameter of 0.02 to 20 microns.

1           49. The microparticle of claim 46, wherein the  
2       microparticle has a diameter of less than about 11 microns.

1           50. A cell comprising the plasmid of claim 45.

1           51. The cell of claim 50, wherein the cell is a  
2 mammalian B cell or APC.

1           52. A method of making a peptide, which method  
2 comprises maintaining the cell of claim 50 under conditions  
3 permitting expression of said polypeptide.

1           53. A method of inducing an immune response in a  
2 mammal, which method comprises administering the nucleic  
3 acid of claim 35 to a mammal.

1           54. A method of inducing an immune response in a  
2 mammal, which method comprises administering the nucleic  
3 acid of claim 36 to a mammal.

1           55. A method of inducing an immune response in a  
2 mammal, which method comprises administering the plasmid of  
3 claim 37 to a mammal.

1           56. A method of inducing an immune response in a  
2 mammal, which method comprises administering the plasmid of  
3 claim 45 to a mammal.

1           57. A method of inducing an immune response in a  
2 mammal, which method comprises administering the  
3 microparticle of claim 38 to a mammal.

1           58. The method of claim 57, wherein the mammal is a  
2 human.

1           59. The method of claim 58, wherein the human  
2 suffers from, or is at risk of a condition selected from the  
3 group consisting of exophytic condyloma, flat condyloma,  
4 cervical cancer, respiratory papilloma, conjunctival  
5 papilloma, genital-tract HPV infection, and cervical  
6 dysplasia.

1           60. A method of inducing an immune response in a  
2 mammal, which method comprises administering the  
3 microparticle of claim 46 to a mammal.

1           61. The method of claim 60, wherein the mammal is a  
2 human.

1           62. The method of claim 61, wherein the human  
2 suffers from, or is at risk of, a condition selected from  
3 the group consisting of exophytic condyloma, flat condyloma,  
4 cervical cancer, respiratory papilloma, conjunctival  
5 papilloma, genital-tract HPV infection, and cervical  
6 dysplasia.

1           63. A plasmid DNA comprising the sequence of SEQ ID  
2 NO:7.

1           64. A microparticle comprising a polymeric matrix.  
2 and a nucleic acid, wherein the polymeric matrix consists  
3 essentially of PLGA and the nucleic acid comprises the  
4 sequence of SEQ ID NO:7.

1           65. A method of inducing a cell mediated, anti-HPV  
2 immune response in a mammal, which method comprises  
3 administering to the mammal a DNA comprising the sequence of  
4 SEQ ID NO:7.

1           66. A method of inducing an immune response in a  
2 patient, which method comprises administering to the patient  
3 a microparticle having a diameter of less than 20 microns  
4 and consisting essentially of a polymeric matrix and a  
5 nucleic acid molecule, wherein the polymeric matrix consists  
6 essentially of PLGA and the nucleic acid molecule comprises  
7 the sequence of SEQ ID NO:7.

1           67. A DNA comprising the sequence of SEQ ID NO:5.

1           68. A DNA comprising the sequence of nucleotides  
2 3219-3624 of SEQ ID NO:7.

1           69. A DNA comprising the sequence of nucleotides  
2 3290-3413 of SEQ ID NO:7.